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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,113

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EXAMINER

RAO, G NAGESH

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,113	Applicant(s) FUKUDA ET AL.	
	Examiner G. NAGESH RAO	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-23 is/are rejected.
- 7) ☒ Claim(s) 15 and 19-23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/28/05 and 9/1/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1) Claim 15 is objected to because of the following informalities: The nature and scope of claim 15 is unclear as to whether it was meant to be dependent on claim 14. As such it will be treated as an independent claim, and examiner points out that the language does not really provide an adequate limitation to the claim itself, as nothing more than a “fluoride” which may be “calcium fluoride, barium fluoride, and magnesium fluoride”. However in light of the application presented, examiner will **also** treat claim 15 under the assumption that it was to be dependent on claim 14. However appropriate correction/clarification is required.

Claims 19-23 are objected to because of the following informalities: The nature and scope of these claims is confusing as to what is being conveyed with respect to their dependency to claim 14, with each having the statement “...of any one of claim 14...” As such examiner is inferring that claims 19-23 are meant to depend from claim 14 and will be treated as such, based on what is currently provided in the amended claim set. However clarity of these claims is requested and appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2) Claim 16 recites the limitation "...characterized in that annealing is conducted before X-ray irradiation." in dependence to claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "...characterized in that the annealing is conducted at 300 to 400⁰C" in dependence to claim 16 which depends from independent claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "...characterized in that the annealing is conducted for 30 minutes to 2 hours" in dependence to claim 16 which depends from independent claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claims 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are directed to method steps depending from a currently claimed product claim (15)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3) Claims 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Gianoulakis (US Patent No. 6350310).

Product by Process Claims Interpretation

Claim(s) 15-18 is/are written in a Product by Process format, and as such the patentable weight given to the claim(s) is/are based on the limitations imparted onto the product's structural characteristics and not the processing steps of making or using said product. Please see MPEP 2113 [R-1] for further details.

With respect to claim 15, Gianoulakis 310 teaches that calcium fluoride and its known existence as a type of fluoride material (See Abstract).

With respect to claims 16-18, the limitations are related to process steps that do not appropriately further limit the physical structure of the product claimed in independent claim 15.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4) Claims 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al “Induced Absorption Phenomena, Thermoluminescence and Colour Centres in KMgF_3 , BaLiF_3 , and LiCaAlF_6 Complex Fluoride” in view of Tatsumi (US Patent No. 4,634,490).

With respect to claim 14 and 23 Sato et al pertains to the known teachings of analyzing fluoride crystalline material for impurities and color centers to determine the quality of the crystalline material in order to aid in perfecting the crystal growth process (See Abstract, Introduction and Experimental Sections).

However Sato et al fails to point out that the X-Ray analysis occurs as a pre-process during the growth of the crystalline material, via pulling a section of the material out from the melt in a fused state and examining the quality of the crystalline material before conducting the growth of the crystal.

In the same field of endeavor pertaining to crystal growth techniques, Tatsumi 490 pertains to the method of monitoring a process for growing single crystal via an X-Ray beam system (See Abstract). Tatsumi 490 discloses the irradiating of X-Rays to a crystalline melt material as it is pulled from the melt process, and analyzing the growth partial fused melt of material, in order to

determine the characteristics of the crystalline melt so as to appropriately adjust the process as necessary for production of the desired single crystal (See Col 4 Lines 11-55).

It would be obvious to one having ordinary skill in the art at the time of the present invention to employ the technique of Tatsumi 490 with that of Sato et al, in order to have the following benefits as suggested:

“By monitoring the characteristics and the states of the crystal displayed on the image amplifier, the conditions of production of the single crystal such as, temperature of the furnace, rotational speed of the crystal or pull up speed can be controlled by the operator so as to produce the desired single crystal (Col 4 Lines 50-55).” As well this ability to monitor the fused piece of melt would allow for determining via routine experimentation, an additive condition of a scavenger based on the results of the analyses.

With respect to claim 15, Sato et al discloses the product CaF_2 as a fluoride material (See Introduction).

With respect to claims 16-17, Sato et al disclose that the annealing of the crystalline material at 400°C of the sample melt occurs before X-Ray irradiation (See 2.2 Experimental Methods Section).

With respect to claim 18, Sato et al discloses the annealing is conducted for 2 hours (See 2.2 Experimental Methods Section).

With respect to claim 19, Sato et al discloses the fluoride material as claimed, and it would be an intrinsic attribute for the material to have a “mirror ground surface” based on the composition of the material.

With respect to claim 20, Sato et al appears to suggest that the X-Ray irradiation can occur longer than 5 minutes (See 3 Experimental Results and Discussions).

With respect to claim 21, Sato et al discloses the kV of the X-ray irradiation being at 30 kV and conventionally speaking the electric current would be 10mA or more with an operation at 30kV (See 2.2 Experimental Methods Section).

With respect to claim 22, Sato et al appears to suggest the X-ray irradiation is conducted multiple times (See 3 Experimental Results and Discussions).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. NAGESH RAO whose telephone number is (571)272-2946. The examiner can normally be reached on 8:30AM-5PM (INDEPENDENT FLEX SCHEDULE).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MIKHAIL KORNNAKOV can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. Nagesh Rao/
GAU 1792 Patent Examiner